

Application No. 09/836,778
Filed: April 17, 2001
TC Art Unit: 2644
Confirmation No.: 6862

REMARKS

The instant Amendment is filed in response to the Examiner's action dated May 7, 2004. Reconsideration is respectfully requested.

Claims 1-21 are currently pending.

Claims 1-21 stand rejected.

Claims 1-3, 5, 9-10, 15-16, and 18-20 have been amended.

The Examiner has rejected claims 1-3, 7-10, 13-15, and 19-21 under 35 U.S.C. 102(e) as being anticipated by Bank et al. (USP 6,628,791). Specifically, the official action indicates that the Bank reference discloses, in relevant part, a parametric audio amplifier system including at least one amplifier for receiving an ultrasonic signal modulated with an audio signal, for amplifying the modulated ultrasonic signal, and for providing the amplified ultrasonic signal at its output, and at least one acoustic transducer assembly including a bias generator, at least one acoustic transducer, and at least one component interfacing the amplifier and the acoustic transducer, in which the interface component receives the amplified ultrasonic signal and provides a drive signal corresponding to the ultrasonic signal to the acoustic transducer. The Applicant respectfully submits, however, that the Bank reference does not disclose all of the elements and

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limitations of amended base claims 1 and 19, and therefore the rejections of the claims under section 102 of the Patent Laws are unwarranted and should be withdrawn.

Specifically, the Applicant respectfully submits that Bank et al. do not disclose a parametric audio amplifier system including at least one amplifier assembly and at least one acoustic transducer assembly, in which the amplifier assembly includes at least one amplifier and a damping resistance, as recited in amended base claims 1 and 19. The amplifier assembly including the amplifier and the damping resistance is described throughout the instant application, for example, see page 9, lines 9-19, of the application. As disclosed in the instant application, the damping resistance is employed to broaden the bandwidth of the parametric audio amplifier system. Further, the damping resistance provides an ultrasonic signal that has a relatively low or limited voltage level, e.g., about 50 volts (see page 9, lines 19-25, of the application).

The Applicant respectfully submits that the Bank reference does not disclose placing a damping resistance or any other voltage limiting component in an amplifier assembly, as recited in amended base claims 1 and 19, but only discloses placing a voltage limiter in an acoustic transducer assembly. This is clearly shown

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in Fig. 7 of Bank et al., which depicts a self-bias circuit 74 with a voltage limiter within the acoustic transducer assembly portion of the system.

In contrast, the parametric audio amplifier system 200 described in the instant application includes the damping resistor 220 within the amplifier assembly 202 (see Fig. 2 of the application). Such a system configuration is significantly different from what is disclosed in the Bank reference. Because the damping resistor 220 is disposed within the amplifier assembly 202 at the output of the amplifier 212, the amplifier assembly 202 is capable of providing an ultrasonic signal to the interface component 216 that has a relatively low voltage level, e.g., approximately 50 volts (see Fig. 2 of the application). The system disclosed by Bank et al. does not include a damping resistance at the output of an amplifier, e.g., the power amplifier 72, and therefore the power amplifier 72 does not provide an ultrasonic signal to the interface component 10 that has a relatively low or limited voltage level (see Fig. 7 of Bank et al.).

Significant advantages are achieved by including the damping resistance at the output of the amplifier within the amplifier assembly of the parametric audio amplifier system, as recited in

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amended base claims 1 and 19. For example, the damping resistance damps the resonant system formed by the inductance of the secondary winding of the step-up transformer and the capacitance of the acoustic transducer, thereby broadening the frequency response of the system (see page 12, lines 13-18, of the application). In addition, connections between the amplifier assembly and the acoustic transducer assembly included in the system can be made to carry only low voltage signals. As a result, the parametric audio amplifier system can be made smaller, less expensive, and conformable to cable routing requirements that are no more stringent than that of conventional loudspeaker systems (see page 3, lines 15-25, of the application).

Because the Bank reference neither teaches nor suggests a parametric audio amplifier system including at least one amplifier assembly and at least one acoustic transducer assembly, in which the amplifier assembly includes at least one amplifier and a damping resistance, as recited in amended base claims 1 and 19, the Bank reference does not anticipate amended claims 1 and 19 and the claims dependent therefrom.

With respect to claims 7-9, the Applicant wishes to point out that the Bank reference neither teaches nor suggests employing a DC bias voltage level (see claim 7), a low frequency AC bias

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voltage level (e.g., roughly audio band; see claim 8), or the ultrasonic drive signal (see claim 9) as the bias energy source in a parametric audio amplifier system. Instead, the Bank reference merely discloses employing a constant carrier frequency output as the bias energy source in a parametric loudspeaker system. Bank et al. further disclose that the constant carrier output is independent of the program material being played through the system (see column 7, lines 5-16, of Bank et al.).

Although the Bank reference includes some disclosure describing the use of DC and AC bias voltages, such use is not related to the parametric loudspeaker system, but is instead related to conventional electrostatic loudspeakers, which typically consist of a diaphragm and two stators (e.g., Bank et al. discloses a self-biasing embodiment containing stators 90, 92, 94, and 96 to bias the circuit; see also column 7, lines 35-45, of Bank et al.). Unlike the conventional electrostatic loudspeakers of Bank et al., the acoustic transducer recited in amended claims 1 and 19 comprises a conductive membrane and an adjacent conductive backplate (see page 3, lines 21-24, of co-pending U.S. Patent Application No. 09/758,606 filed January 11, 2001 entitled PARAMETRIC AUDIO SYSTEM, which is incorporated by reference within the instant application). The Bank reference provides no hint

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about how DC and AC bias voltages might be employed with such
acoustic transducers, and therefore the Bank reference does not
anticipate claims 7-8. Moreover, the Bank reference provides no
hint about how the program material being played through the
system might be employed as a bias energy source, and therefore
the Bank reference does not anticipate the use of the ultrasonic
drive signal as an energy source for the bias generator, as
recited in amended claim 9 (see page 11, lines 24-26, of the
application). The Applicant therefore respectfully submits that
the rejections of claims 1-3, 7-10, 13-15, and 19-21 under 35
U.S.C. 102(e) are unwarranted and should be withdrawn.

The Examiner has rejected claims 5-6 and 16-18 under 35 U.S.C. 103(a) as being obvious over Bank et al. as applied to claims 1 or 15 in view of Pompei (U.S. Pat. Appl. Pub. No. 2001/0007591). The Examiner has further rejected claims 11-12 under 35 U.S.C. 103(a) as being unpatentable over Bank et al. as applied to claim 10 in view of Manabe (USP 6,556,687). The Applicant respectfully submits, however, that neither the Pompei reference nor the Manabe reference cures the deficiencies of the Bank reference, and therefore the suggested combinations of the Bank, Pompei, and Manabe references do not render dependent claims 5-6, 11-12, and 16-18 obvious. The Applicant therefore

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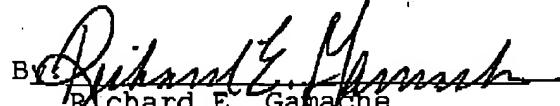
respectfully submits that the rejections of dependent claims 5-6, 11-12, and 16-18 under section 103 of the Patent Laws are unwarranted and should be withdrawn.

In view of the foregoing, it is respectfully submitted that the present application is in a condition for allowance. Early and favorable action is respectfully requested.

The Examiner is encouraged to telephone the undersigned Attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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